5-B-11

INSTRUCTION MANUAL

MODEL 26200

LOG PICOAMMETER

KEITHLEY INSTRUMENTS, INC.

INSTRUCTION MANUAL

MODEL 26200

LOG PICOAMMETER

(u)

warranty

We warrant each of our products to be free from defects in material and workmanship. Our obligation under this warranty is to repair or replace any instrument or part thereof which, within a year after shipment, proves defective upon examination. We will pay local domestic surface freight costs.

To exercise this warranty, write or call your local Keithley representative, or contact Keithley headquarters in Cleveland, Ohio. You will be given prompt assistance and shipping instructions.

repairs and calibration

Keithley Instruments maintains a complete repair and calibration service as well as a standards laboratory in Cleveland, Ohio. A service facility is also located in Los Angeles for our west coast customers.

A Keithley service facility at our Munich, Germany office is available for our customers throughout Europe. Service in the United Kingdom can be handled at our office in Reading. Additionally, Keithley representatives in most countries maintain service and calibration facilities.

To insure prompt repair or recalibration service, please contact your local field representative or Keithley headquarters directly before returning the instrument. Estimates for repairs, normal recalibrations and calibrations traceable to the National Bureau of Standards are available upon request.

8AM-5PM M-F

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SPECIFICATIONS

RANGES: Selection of three single scale models.

Models	Range Span Ampere	Input Polarity	Decade Span	Calibration Points Ampere
26100	10^{-3}-10^{-11}	Positive	8	$10^{-4}/10^{-10}$
26200	10^{-4}-10^{-12}	Positive	8	$10^{-5}/10^{-11}$
26300	10^{-7}-10^{-13}	Positive	6	$10^{-8}/10^{-11}$

OVERALL OPERATING CHARACTERISTICS:

TEMPERATURE COEFFICIENT: Less than 2%/°C referred to input current from +10 to +30°C.

RISE TIME: Seconds to 90% of final current value. (DAMPING control at minimum setting):

Models	Current Change Ampere	With No Significant Capacitance Across Input Terminals	With 5000 pF Capacitance Across Input Terminals
26300	10^{-13} to 10^{-12}	3 seconds	6 seconds
All	10^{-12} to 10^{-7}	1 second	2 seconds

LINEAR-LOG RELATIONSHIP: Ideal: $E_O = M \log I + C$. Actual: E_O actual will deviate from the best straight line by less than 10 mV (where M = slope and C = offset of transfer function). *

OUTPUT: 1 volt per decade from minimum current to maximum current. Output polarity is inverse of input polarity

CONNECTORS: Input: BNC type. Output: Microphone receptacle, XLR-3-32 (connectors located on rear panel).

POWER: 90-125 volts or 180-250 volts, 50-60 Hz.

ACCESSORIES SUPPLIED: Set of mating connectors.

DIMENSIONS, WEIGHT: 5½" (140 mm) high x 8¾" (222 mm) wide x 13" (330 mm) deep; net weight, 8 pounds (3,6 kg).

*40 mV at 10^{-12}A, 300 mV at 10^{-13}A

SECTION 1. GENERAL INFORMATION

1-1. GENERAL. The Model 26000 log picoammeters provide a logarithmic scale which covers a wide range of currents without switching. Current measurements are easily performed since the picoammeter can be directly connected to phototubes, photomultipliers, ion vacuum gauges, ionization chambers, and automated semiconductor testing equipment.

1-2. FEATURES. The Model 26000 is designed to allow the user to select the instrument which most closely meets the measurement needs. Standard features include an easy-to-read mirrored meter scale, a recorder output, an overload recovery switch, and a front panel calibration check switch. On dual polarity units, two front panel lamps are used to indicate the polarity at the input.

1-3. OPTIONS. The options available for factory installation on the Model 26000 include an internally installed bias supply, and negative or dual polarity.

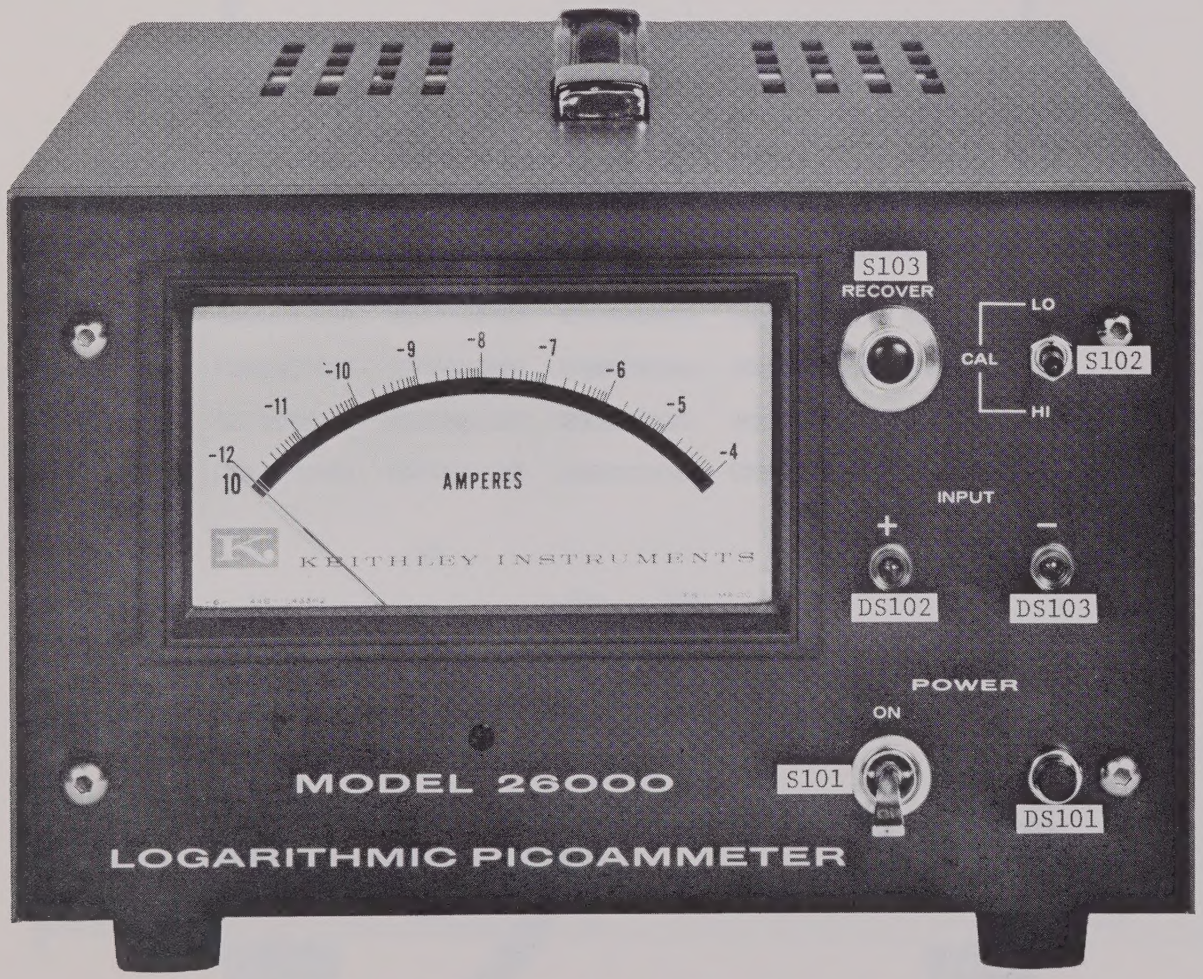


FIGURE 1. Front Panel. (Model 26220 shown).

2-3. CONTROLS AND INDICATORS.

a. Power Switch. This switch controls the line power to the instrument.

b. Power Indicator. This indicator glows when power is on.

c. Meter Scale. This meter is calibrated to read directly in amperes. The unequal divisions between decade ranges are a result of the logarithmic characteristic of the instrument.

d. Calibration Check Switch. This switch has 2 positions: HI and LO. When the switch is set to the high position, the meter should indicate the proper high calibration current as in Table 2-1. When the switch is set to the low position, the meter should indicate the proper low calibration current as in Table 2-1. When the switch is in the center "off" position, the meter indicates normally.

e. Input Polarity Indicators. (Dual Polarity units only). These indicators show the polarity of the input current. The meter scale will always read up-range regardless of the input current polarity. Pin 3 on the rear panel recorder output also indicates polarity where Logic "0" = positive input.

f. Recover Switch. This switch removes the input current overload by shorting input High to Low and disconnecting the logarithmic amplifier allowing the input amplifier to come out of saturation when subjected to a severe overload.

g. Line Switch (Rear Panel). This switch sets the instrument for either 117 or 234 volt operation.

TABLE 2-1.
Current Reading at CAL CHECK Positions

Model No.	Range	HI CAL Reading	LO CAL Reading
26100	10^{-3} to 10^{-11}A	10^{-4}A	10^{-10}A
26200	10^{-4} to 10^{-12}A	10^{-5}A	10^{-11}A
26300	10^{-7} to 10^{-13}A	10^{-8}A	10^{-11}A

2-4. CURRENT MEASUREMENTS.

a. Linear-Log Relationship. The Model 26000 provides an output which is proportional to the logarithm of the input current. The transfer function for the 26000 has the following form:

$$E_o = M \log I + C$$

where E_o = analog output voltage
M = slope or rate of change of voltage
C = offset of transfer function
I = input current

The exact values of M and C are a function of the calibration of a particular instrument. Typically the value of M is 1 volt per decade.

b. Meter Scale Interpretation. The front panel meter is calibrated on a logarithmic scale. The pointer indicates at the extreme left position with no current applied at the input terminal. When an input current is applied, the meter indicates the current in decade steps as denoted by the major scale divisions. The smaller divisions denote increments of a decade. The compactness of divisions of the meter scale is a result of the logarithmic response.

c. Recorder Output. The output of the 26000 is provided between pin 1 (signal) and pin 2 (low). The typical voltage at the output is 1 volt per decade. (See specifications for a discussion of accuracy of linear-log relationship.) On dual polarity units, pin 3 indicates polarity where Logic "0" = positive.

d. Recover Switch Operation. The RECOVER switch on the front panel is a momentary contact pushbutton which shorts the input High to input Low (thus removing the current overload at the amplifier input). In addition, the first log amplifier stage is brought out of saturation by a connection between input and output.

NOTE

A small meter offset may be indicated when the Recover switch is depressed. The pointer should return to extreme left position on the meter scale when the Recover button is released and no current is applied at the input.

SECTION 3. THEORY OF OPERATION

3-1. GENERAL. This section contains a description of the circuit theory of the Model 26000 Log Picoammeter.

3-2. LOG PICOAMMETER. The Model 26000 is a sensitive picoammeter with a built-in logarithmic response. The first stage of amplification is provided by a high gain amplifier with negative feedback. The logarithmic characteristic is obtained by utlizing a transistor as the feedback element. The transistor develops a voltage across the feedback of the amplifier which is proportional to the collector current. For a solid-state device, it can be shown that the I versus E characteristic of a P-N junction reduces to:

$$V = -2.3\frac{kT}{q}\log_{10} I + C$$

where V= voltage across junction (volts)
I= current through junction (amperes)
C= offset voltage
k= Boltzmann's constant
q= electron charge (coulombs)
T= temperature (^{o}K).*

The slope of the linear-log relationship is 2.3 kT/q which is approximately 59 mV per decade current change at 25^{o}C.

*NOTE

The Model 26000 incorporates special temperature compensating circuitry which reduces the effects of temperature variations in the log amplifier to a nominal level.

3-3. INPUT SWITCHING CIRCUITRY (SCHEMATIC 25952B). The input current applied to J101 is connected to the logarithmic amplifier through resistor R103 (which provides over current protection).

a. Recover Mode Switching. In this mode the input is connected to low through resistor R103. When the Recover Switch is depressed both relays K101 and K102 are energized. A connection is made in the feedback path of the log amplifier to pull the first stage out of saturation. (Resistor R102 is connected between the input at R102 and the output of QA101).

b. Low Cal Check. The input is connected to low through R103. Relay K101 is energized so that a calibrated current is applied to the log amplifier. The value of current is approximately the reciprocal of resistor R101. (See Table 3-1).

c. High Cal Check. The input is connected to low through R103. Both relays K101 and K102 are energized, so that a calibrated current is applied to the log amplifier. The value of current is approximately the reciprocal of resistor R102. (See Table 3-1).

TABLE 3-1.
Current Reading at CAL Check Positions

Model No	Range	HI CAL Reading	LO CAL Reading
26100	10^{-3} to 10^{-11}A	10^{-4}A	10^{-10}A
26200	10^{-4} to 10^{-12}A	10^{-5}A	10^{-11}A
26300	10^{-7} to 10^{-13}A	10^{-8}A	10^{-11}A

3-4. LOG AMPLIFIER CIRCUITRY (POSITIVE POLARITY VERSION, SCHEMATIC 25932C). The input current is applied to a high gain amplifier composed of a balanced MOS-FET input pair (Q103, Q105) and integrated circuit QA101. Transistors Q101 and Q102 are PNP/NPN types which provide the logarithmic characteristic. Each transistor is connected (collector to emitter) in the feedback of the first stage amplifier. Transistor Q104 provides input voltage protection. Resistors R112 to R115 set the fractional feedback gain. Potentiometer RP104 is a damping control for the log amplifier. The input amplifier is followed by a gain setting stage. When the output of QA101 is negative going, the signal is amplified by transistor Q106 and integrated circuit QA102. Potentiometer RP103 is a gain adjustment which sets the over-all gain to 1 volt per decade of input current. Potentiometer RP102 is an offset voltage adjustment. The output stage consists of a dual emitter-follower Q107 and Q108.

3-5. MAIN CHASSIS CIRCUITRY (SCHEMATIC 25953D).

a. Power Supply. The power supply module is a completely self-contained unit which provides ±15 volts dc. The input power is set by the rear panel line switch for either 117 or 234V rms, 50-60 Hz. The supply is fused for 0.5 amperes at 117V.

b. Polarity Indication. The front panel meter indicates up-range for a positive going input signal only. No polarity indicators are used.

SECTION 4. CALIBRATION

4-1. GENERAL. The procedure given in this section may be used to assure the performance of the instrument within specifications.

4-2. TEST EQUIPMENT. The equipment shown in Table 4-1 is recommended for use in performing the calibration.

TABLE 4-1
Test Equipment

Description	Specification	Mfr.	Model
Current Source	10^{-14} - 10^{-4}A, .25-1.6%	Keithley	261
Digital Voltmeter	1μV-1000V, 0.03%	Keithley	171
Oscilloscope	---	Tektronix	561

4-3. ADJUSTMENT PROCEDURE.

a. Log Amplifier Zero. Connect the DVM between J104 (zero test jack) and LOW (black binding post) on the rear panel. Depress and hold the RECOVER Switch. Adjust the ZERO potentiometer on the log amplifier module (as shown in Figure 4) for an output reading of 0.0000V ±0.5 mV. Once the amplifier zero is set further adjustments are usually unnecessary. Remove all test equipment connections in preparation for the next test.

b. Log Amplifier Gain & Offset. Locate resistor R103 on the log amplifier module. Connect a jumper across R103 as shown in Figure 5. Replace shield cover. Connect the DVM between pins 1 and 2 on J103. Use the oscilloscope to monitor the output for unusual oscillations, etc.

CAUTION!

Do not apply a large input overload current while R103 is shorted out. Remove the short circuit after making the necessary adjustments.

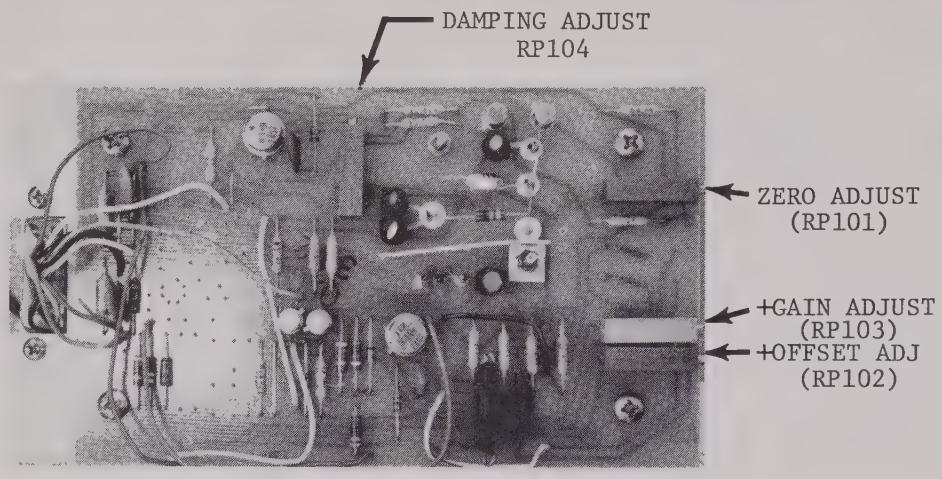


FIGURE 4. Log Amplifier Module.

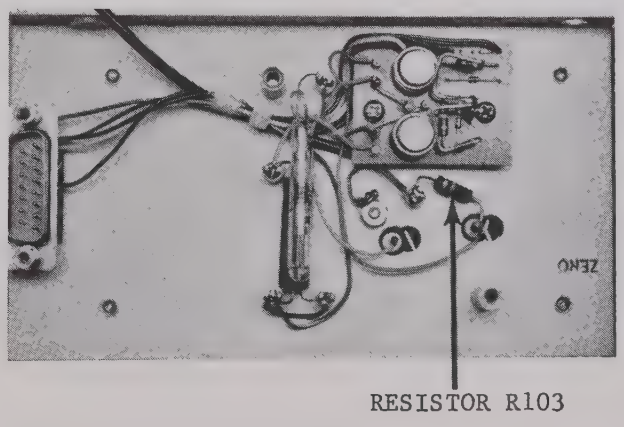


FIGURE 5. Log Amplifier (Bottom View).

1. Offset Compensation (Positive Input). Apply an input signal of $+1 \times 10^{-11}$A from the Model 261 Current Source. Adjust the +OFFSET potentiometer RP102 for -1.000V ± 10 mV at the output.

2. Gain Setting (Positive Input). Apply an input signal of $+1 \times 10^{-5}$A from the Model 261. Adjust the + GAIN potentiometer RP103 for -7.000 V ± 10 mV at the output.

3. Offset/Gain Interaction. Repeat steps 1 and 2 above to assure that both adjustments are within specified tolerance.

c. Damping. This adjustment should be made to suit the response needed by a particular measurement. The DAMPING ADJUST potentiometer RP104 provides increased damping by clockwise adjustment. Adjustment counterclockwise decreases damping. Since source capacitance can affect the stability of the instrument, the damping adjustment should be checked prior to measurements in which a change in cable, etc., has been made. Oscillations may occur if damping is insufficient for source conditions.

SECTION 5. REPLACEABLE PARTS

5-1. GENERAL. This section contains information for ordering replacement parts. To place an order or obtain information concerning replacement parts, contact your Keithley representative or the factory. When ordering parts, include the following information:

a. Instrument Model Number

b. Instrument Serial Number

c. Part Description

d. Circuit Designation (if applicable)

e. Keithley Stock Part Number (if applicable)

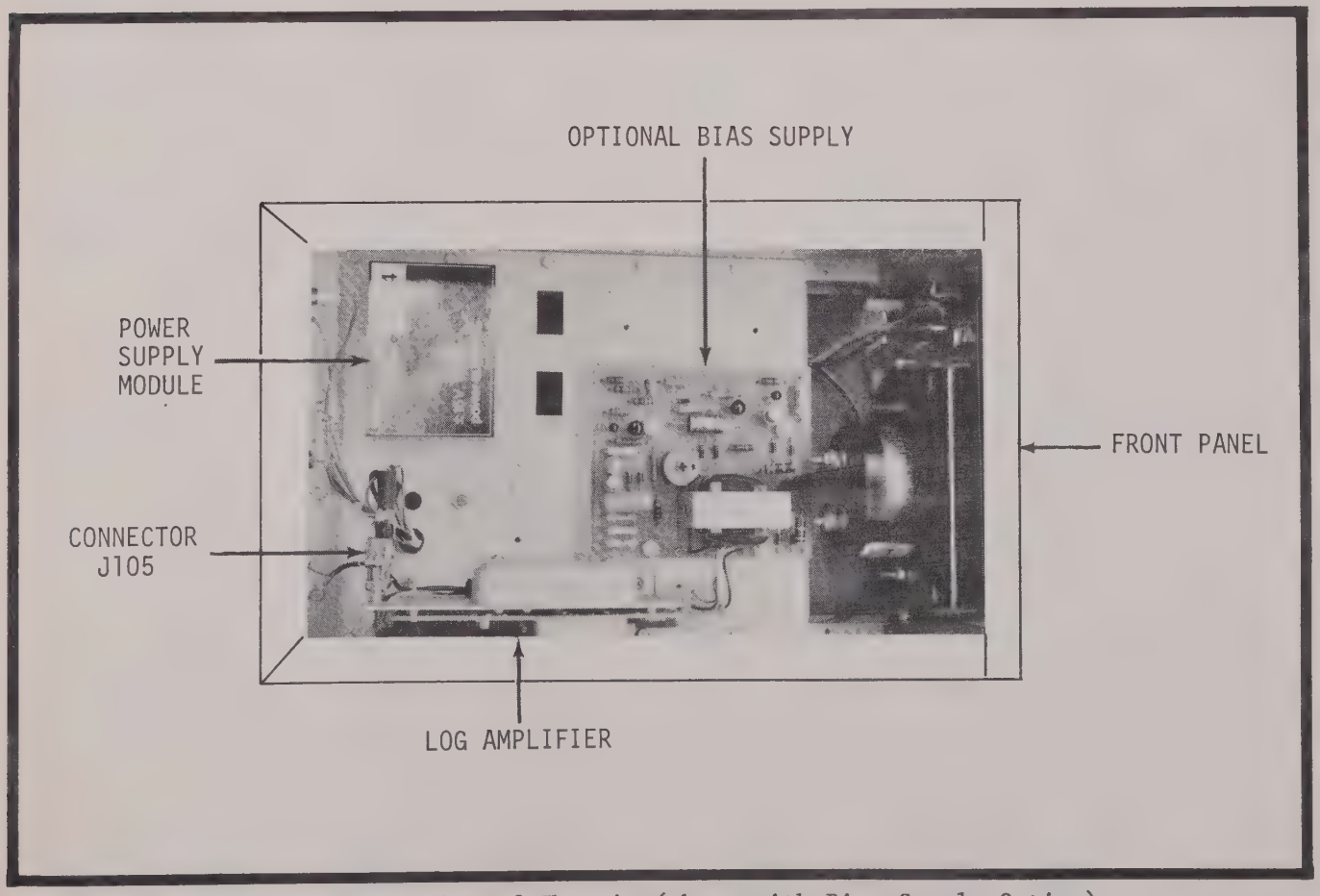


FIGURE 6. Top View of Chassis (shown with Bias Supply Option).

REPLACEABLE PARTS LIST
MAIN CHASSIS (SCHEMATIC 25953D)

RESISTORS

Circuit Desig.	Value	Rating	Type	Mfr. Code	Mfr. Desig.	Keithley Part No.
R140	Not Used	------	----	----	-----	--------
R141	Not Used	------	----	----	-----	--------
R142	Not Used	------	----	----	-----	--------
R143	Not Used	------	----	----	-----	--------
R144	Not Used	------	----	----	-----	--------
R145	Not Used	------	----	----	-----	--------
R146	Not Used	------	----	----	-----	--------
R147	Not Used	------	----	----	-----	--------
R148	Not Used	------	----	----	-----	--------
R149	Not Used	------	----	----	-----	--------
R150 (26100)	127KΩ	1%, 1/2 W	MtF	DALE	DCS-1/2-127K	R12-127K
(26200)	698KΩ	1%, 1/2 W	MtF	IRC	CEC-698K	R94-698K
(26300)	1.4MΩ	1%, 1/2 W	MtF	DALE	DCS-1/2-1.4M	R12-1.4M
R151	100K Ω	1%, 1/2 W	MtF	DALE	DCS-1/2-100K	R12-100K
R152	Value Selected		----	----	----	--------
R153	2K Ω	10%, 0.25W	WW	CTS	AW-2K	RP34-2K

MISCELLANEOUS

M101	Meter (less scale)	KI	CUSTOM	ME-98
PS101	Power Supply Module	PHIL	2204	Not Stocked
DS101	Pilot Lamp, Neon, Red	LEE	45GR11311	PL-50
C109	Capacitor, 0.05μF, 600V, My	SPRAG	GPS-S50	C62-.05M
S101	Switch, Toggle, Power	C-F	CFO3ACS-1869	SW-265
S102	Switch, Calibration	ALCO	MST-105XG	SW-277
S103	Switch, Recover	GRAY	35-3	Not Stocked
S104	Switch, 117-234V	MUTER	4633B	SW-151
F101	Fuse, 1/2A, slo-blo	BUSS	MDL-1/2A	FU-4
P101	Line Cord	ECC	463813	CO-5
J101	Receptacle, BNC	AMPH	31-221	CS-15
J102	Not Used	----	-----	--------
J103	Receptacle, 3-pin	ITT	XLR-3-32	CS-71
J104	Banana Jack Black	JOHN	108-903	BJ-6
J105	Plug, 15-pin	ITT	DA-15S	CS-86
J106	Not Used	----	-----	--------
J107	Not Used	----	-----	--------
J108	Receptacle	----	-----	See 4109-20
J201	Receptacle	----	-----	See 4109-20

DIODES

D101-109	Not Used	----	-----	--------
D110	Diode, Rectifier, 400mA, 225V	TEXAS	1N645	RF-14
D111	Diode, Rectifier, 400mA, 225V	TEXAS	1N645	RF-14
D112	Diode, Rectifier, 400mA, 225V	TEXAS	1N645	RF-14

POSITIVE POLARITY VERSION
(SCHEMATIC 25932C)

TRANSISTORS

Circuit Desig.	Description	Mfr. Code	Mfr. Desig.	Keithley Part No.
Q101	Selected*, PNP Type	TEXAS	2N2907A*	Not Stocked
Q102	Selected*, NPN Type	TEXAS	2N930*	Not Stocked
Q103,105	FET, Matched pair	KI	Selected	20933
Q104	Selected*, NPN Type	TEXAS	2N930*	Not Stocked
Q105	See above			
Q106	PNP Type.	TEXAS	2N2907A	Not Stocked
Q107	NPN Type.	TEXAS	2N930	Not Stocked
Q108	PNP Type.	TEXAS	2N2907A	Not Stocked

CAPACITORS

Circuit Desig.	Description	Mfr. Code	Mfr. Desig.	Keithley Part No.
C101	2.2 µF, 20V, ETT	UNCC	K2R2J20K	C80-2.2M
C102	2.2 µF, 20V, ETT	UNCC	K2R2J20K	C80-2.2M
C103	0.01 µF, 1000V, CerD.	SPRAG	10SS-S10	C22-.01M
C104	0.01 µF, 1000V, CerD.	SPRAG	10SS-S10	C22-.01M
C105	0.001µF, 1000V, CerD.	ERIE	801000X5F0102K	C22-.001M
C106	100 pF, 200V, Poly	ARCO	2PJ-101G	C108-100P
C107	100 pF, 1000V, CerD.	CENLB	DD101-10%	C22-100P

DIODES

Circuit Desig.	Description	Mfr. Code	Mfr. Desig.	Keithley Part No.
D101	Zener, 24V, 0.25W	DICK	1N723	DZ-17
D102	Zener, 24V, 0.25W	DICK	1N723	DZ-17
D103	Zener, 9.1V	SEMCR	1N713A	DZ-38
D104	Rectifier, 75mA, 75V.	TEXAS	1N914	RF-28
D105	Rectifier, 75mA, 75V.	TEXAS	1N914	RF-28
D106	Rectifier, 75mA, 75V.	TEXAS	1N914	RF-28
D107	Rectifier, 75mA, 75V.	TEXAS	1N914	RF-28

POSITIVE POLARITY VERSION
(SCHEMATIC 25932C)

RESISTORS

Circuit Desig.	Description	Mfr. Code	Mfr. Desig.	Keithley Part No.
R101	Not used.	.....	.....	.....
R102	10KΩ, 10%, 1/4W, Comp	A-B	CB-103	R76-10K
R103	133KΩ, 1%, 1/8W, MtF.	IRC	CEA-133KΩ-10%	R88-133K
R104	Not Used.	.....	.....	.....
R105	133KΩ, 1%, 1/8W, MtF.	IRC	CEA-133KΩ-1%	R88-133K
R106	1KΩ, 1%, 1/8W, MtF.	IRC	CEA-1KΩ-1%	R88-1K
R107	64.9KΩ, 1%, 1/8W, MtF	IRC	CEA-64.9KΩ-1%	R88-64.9K
R108	100KΩ, 10%, 1/4W, Comp.	A-B	CB-104-10%	R76-100K
R109	Not Used.	.....	.....	.....
R110	Not Used.	.....	.....	.....
R111	Not Used.	.....	.....	.....
R112	10KΩ, 1%, 1/8W, MtF	IRC	CEA-10KΩ-1%	R88-10K
R113	100KΩ, 1%, 1/8W, MtF.	IRC	CEA-100KΩ-1%	R88-100K
R114	Value Selected.	.....	.....	.....
R115	Value Selected.	.....	.....	.....
R116	499KΩ, 1%, 1/8W, MtF.	IRC	CEA-499KΩ-1%	R88-499K
R117	10KΩ, 1%, 1/8W, MtF	IRC	CEA-10KΩ-1%	R88-10K
R118	100KΩ, 1%, 1/8W, MtF.	IRC	CEA-100KΩ-1%	R88-100K
R119	Value Selected.	.....	.....	.....
R120	34.8KΩ, 1%, 1/8W, MtF	IRC	CEA-34.8KΩ-1%	R88-34.8K
R121	Value Selected.	.....	.....	.....
R122	1KΩ, 10%, 1/4W, Comp.	A-B	CB-102-10%	R76-1K
R123	470Ω, 10%, 1/4W, Comp	A-B	CB-471-10%	R76-470
R124	470Ω, 10%, 1/4W, Comp	A-B	CB-471-10%	R76-470
R125	Value Selected.	.....	.....	.....
R126	Value Selected.	.....	.....	.....
R127	Value Selected.	.....	.....	.....
R128-R149	Not Used	.....	.....	.....

See page 14 for Circuit Designations R150 through R153.

POSITIVE POLARITY VERSION
(SCHEMATIC 25932C)
(cont'd)

MISCELLANEOUS

Circuit Desig.	Description	Mfr. Code	Mfr. Desig.	Keithley Part No.
QA101	Integrated Circuits, Amplifier. .	NAT	LM301AH	IC-2
QA102	Integrated Circuits, Amplifier. .	NAT	LM301AH	IC-2
J109	Connector, 15-pin	ITT	DA-15P	CS-87
RP101	Potentiometer, 2KΩ, 0.75W	BECK	89P2K	RP89-2K
RP102	Potentiometer, 500KΩ, 0.75W . . .	BECK	89P500K	RP89-500K
RP103	Potentiometer, 500KΩ, 0.75W . . .	BECK	89P500K	RP89-500K
RP104	Potentiometer, 100KΩ, 0.75W . . .	BECK	89P100K	RP89-100K
T101	Thermistor.	YEL	YSI44008	Not Stocked

REPLACEABLE PARTS LIST
INPUT SWITCHING (SCHEMATIC 25952B)

RESISTORS

Circuit Desig.	Value	Rating	Type	Mfr. Code	Mfr. Part No.	Keithley Part No.
R101	$10^{11}\Omega$	--	GCb	VICT	RX-1-10^{11}	R20-10^{11}
R102	100KΩ	1%, 1/2 w	DCb	DALE	DCF-1/2-100K	R12-100K
R103	10K Ω	10%, 1/2w	Comp	A-B	EB-10KΩ	R1-10K
R104	390 Ω	10%, 1/4w	Comp	A-B	CB-391-10%	R76-390
R105	390 Ω	10%, 1/4w	Comp	A-B	CB-391-10%	R76-390

Cross-Reference of Manufacturers

ABREV.	NAME AND ADDRESS
A-B	Allen-Bradley Corp. Milwaukee, WI. 53204
ALCO	Alco Switch Lawrence, MA. 01842
AMPH	Amphenol Corp. Broadview, IL. 60153
AMPRX	Amprex Elkgrove Village, IL. 60007
ARCO	Arco Electronics, Inc. Great Neck, NY. 11022
BECK	Beckman Instruments, Inc. Fullerton, CA. 92634
BUSS	Bussmann Mfg. Co. St. Louis, MO. 63107
CENLB	Centralab Division Milwaukee, WI. 53201
C-F	Circle-F Industries Trenton, NJ. 08604
CTS	CTS Corporation Elkhart, IN. 46514
DALE	Dale Electronics, Inc. Columbus, NB. 68601
DICK	Dickson Electronics Corp. Scottsdale, AZ. 85052
ECC	Electric Cord Company Fairfield, NJ. 07006
ERIE	Erie Technological Products Erie, PA. 16512
FAIR	Fairchild Instrument Corp. Mountain View, CA. 94040
GENS	Genisco Technology Corp. Compton, CA. 90221
GRAY	Grayhill, Inc. La Grange, IL. 60525
IRC	IRC Division Burlington, IA. 52601
ITT	ITT Cannon Electric, Inc. Los Angeles, CA. 90031
JOHN	Johnson E. F. Company Waseca, MN. 56093
KI	Keithley Instruments, Inc. Cleveland, OH. 44139
LEE	Leecraft Mfg. Co., Inc. Long Island City, NY. 11101
MOLEX	Molex Douners Grove, IL. 60515
MOT	Motorola Products Inc. Phoenix, AZ. 85008
MUTER	Muter Company Chicago, IL. 60638
NAT	National Semiconductor Corp. Santa Clara, CA. 95051
PHIL	Teledyne Philbrick Dedham, MA. 02026
POTT	Potter Company Wesson MS. 39191
SEMCR	Semcor Division Phoenix, AZ. 85019
SPRAG	Sprague Electric Co. North Adams, MA. 01247
RCA	RCA Corporation Somerville, NJ. 08876
S-T	Sarkes Tarzian Inc. Bloomington, IN. 47401
TEXAS	Texas Instruments, Inc. Dallas, TX. 75231
UNCC	Union Carbide Corp. New York, NY. 10017
VICT	Victoreen Instrument Co. Cleveland, OH. 44103
YEL	Yellow Springs Company Yellow Springs, OH. 45387

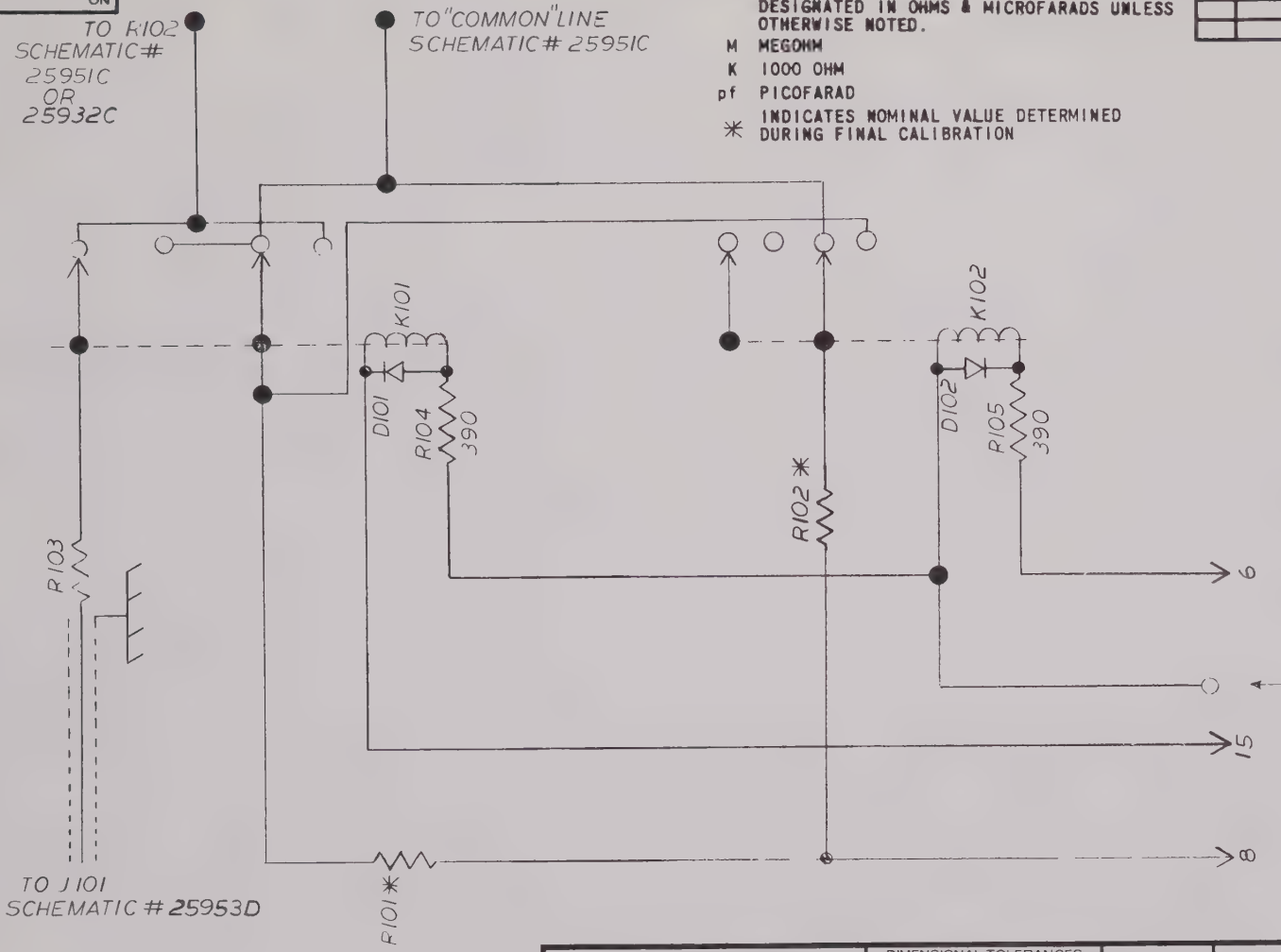
25952B

NOTES:

ALL RESISTANCE & CAPACITANCE SHALL BE DESIGNATED IN OHMS & MICROFARADS UNLESS OTHERWISE NOTED.

M MEGOHM
K 1000 OHM
pf PICOFARAD
* INDICATES NOMINAL VALUE DETERMINED DURING FINAL CALIBRATION

LTR.	ECO NO.	REVISION	DATE



RESISTOR VALUES

	261XX	262XX	263XX
R101	10^{10}	10"	10" Ω
R102	10K	10^{5}	10^{8} Ω
R103	10K	10K	10K Ω

MODEL	NEXT ASSEMBLY	QTY
26000 RCL		

USED ON

DO NOT SCALE THIS DRAWING

DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED

DATE 11-6-72 | SCALE | ENG APPR. | DRN. O.B.

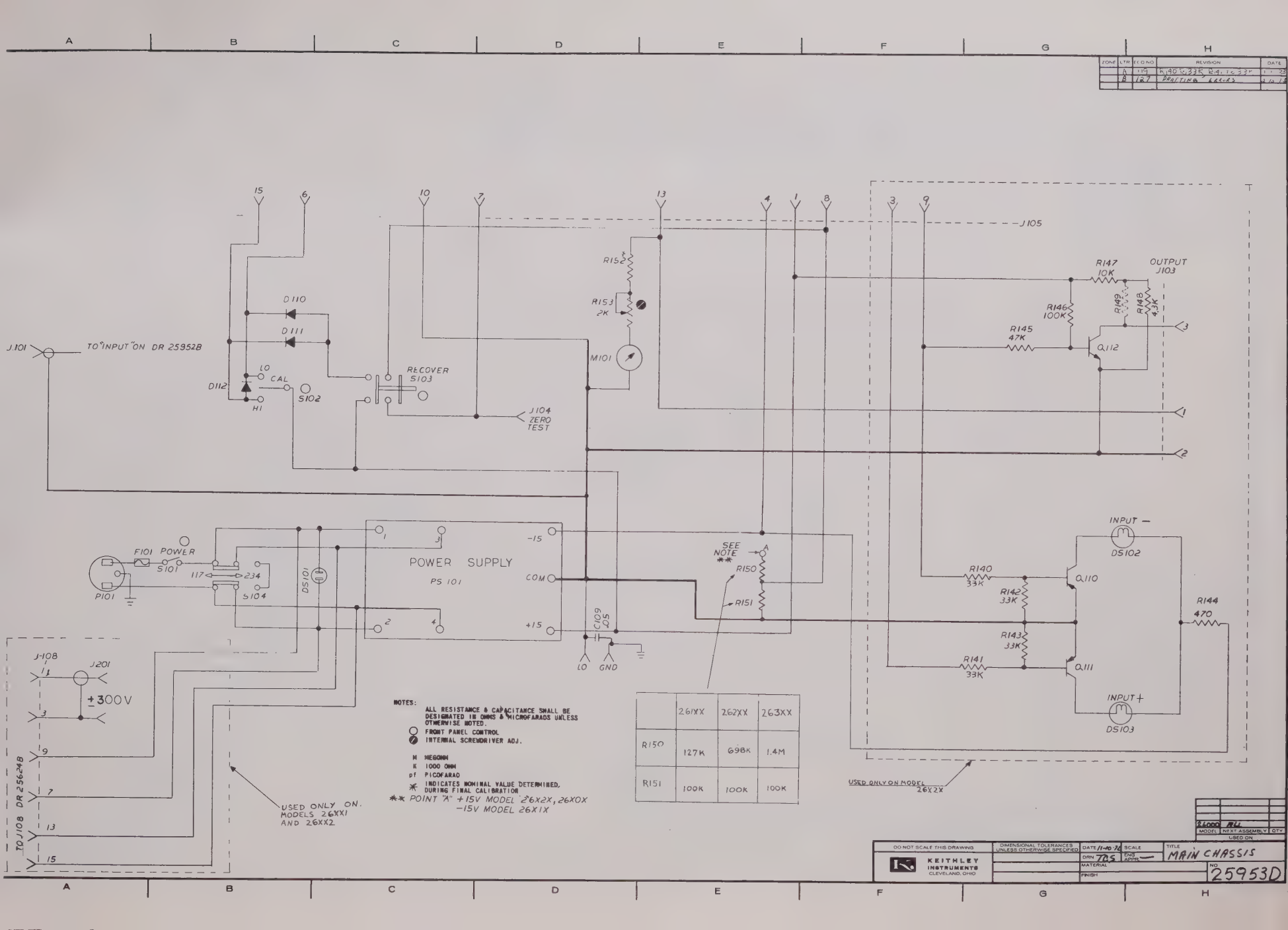
MATERIAL

FINISH

KEITHLEY INSTRUMENTS CLEVELAND, OHIO

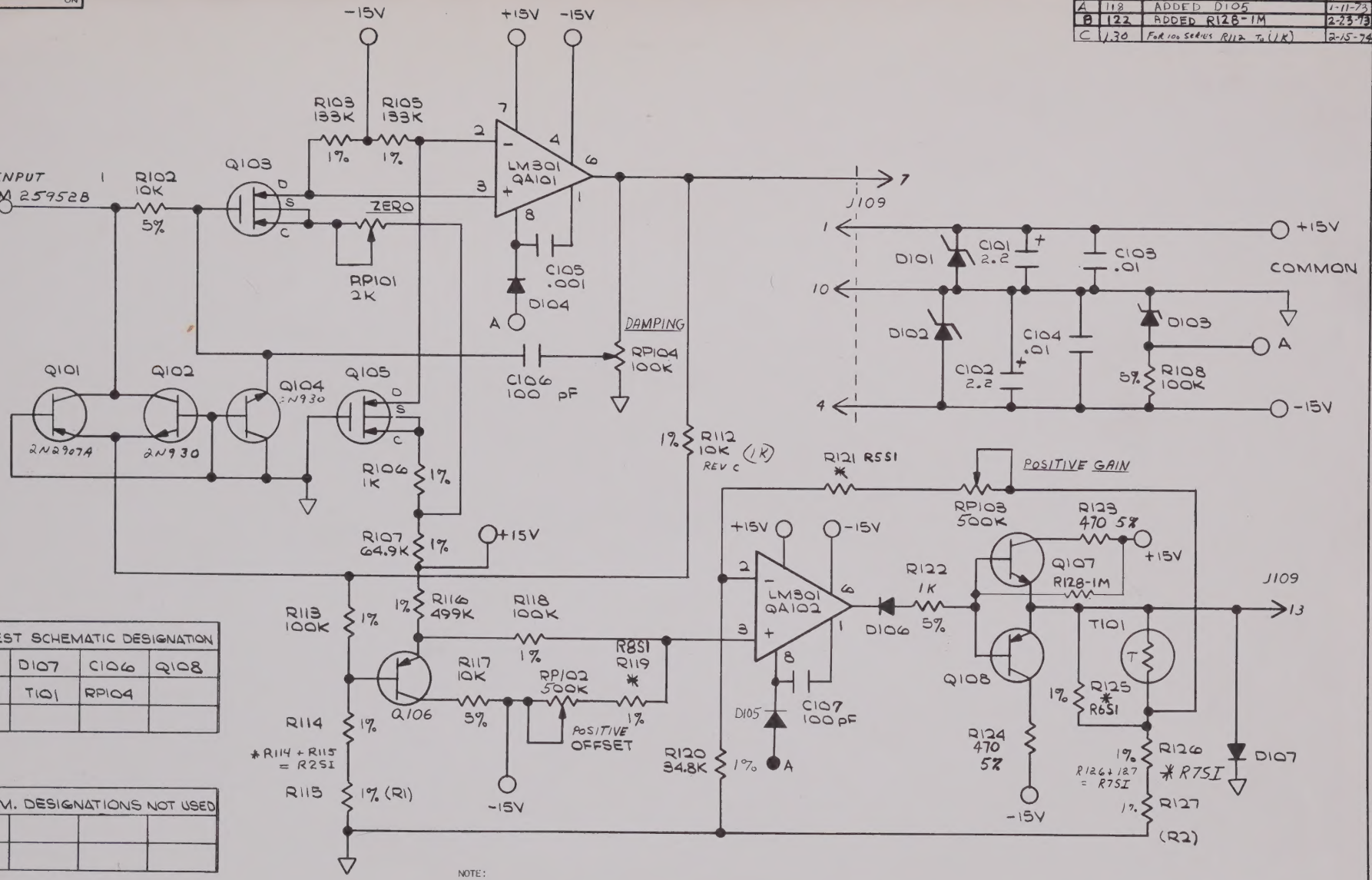
TITLE: INPUT SWITCHING

NO. 25952B


J101
TO "INPUT" ON DR 25952B
D110
D111
D112
LO
CAL
HI
S102
RECOVER
S103
J104
ZERO
TEST
R152
R153
2K
M101
J105
R147
10K
OUTPUT
J103
R146
100K
R149
R148
43K
R145
47K
Q112
INPUT −
DS102
R140
33K
Q110
R142
33K
R144
470
R143
33K
R141
33K
Q111
INPUT +
DS103
USED ONLY ON MODEL 26X2X
F101
POWER
S101
117
234
S104
P101
DS101
POWER SUPPLY
PS 101
-15
COM
+15
C109
.05
LO
GND
SEE NOTE **
R150
R151
J108
J201
±300V
TO J108 DR 25628B
USED ONLY ON MODELS 26XX1 AND 26XX2.
NOTES:
ALL RESISTANCE & CAPACITANCE SHALL BE DESIGNATED IN OHMS & MICROFARADS UNLESS OTHERWISE NOTED.
FRONT PANEL CONTROL
INTERNAL SCREWDRIVER ADJ.
M MEGOHM
K 1000 OHM
pf PICOFARAD
* INDICATES NOMINAL VALUE DETERMINED DURING FINAL CALIBRATION
** POINT "A" +15V MODEL 26X2X, 26XOX
−15V MODEL 26X1X
261XX 262XX 263XX
R150 127K 698K 1.4M
R151 100K 100K 100K
ZONE LTR ECO NO REVISION DATE
A 119 K,190 to 235 R4, IC 33K 1-23
B 127 DRAFTING CHANGES 2-10-78
DO NOT SCALE THIS DRAWING
DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED
DATE 11-10-78
SCALE
DRN 705
ENG
APPR
MATERIAL
FINISH
KEITHLEY INSTRUMENTS CLEVELAND, OHIO
TITLE MAIN CHASSIS
NO. 25953D
MODEL 2600 NEXT ASSEMBLY
USED ON
QTY

25932 ON

LTR	ECO NO	REVISION	DATE
A	118	ADDED D105	1-11-73
B	122	ADDED R128-1M	2-23-73
C	130	FOR 100 SERIES R112 TO (1K)	2-15-74



HIGHEST SCHEMATIC DESIGNATION			
R127	D107	C106	Q108
QA102	T101	RP104	

SCHEM. DESIGNATIONS NOT USED			

NOTE:

1. ALL RESISTANCE & CAPACITANCE SHALL BE DESIGNATED IN OHMS & MICROFARADS UNLESS OTHERWISE NOTED.
2. M MEGOHM
3. K 1000 OHMS
4. pF PICOFARAD
5. ALL NPN TRANSISTOR ARE 2N930
6. ALL PNP TRANSISTORS 2N2907A
5. * INDICATES NOMINAL VALUE DETERMINED DURING FINAL CALIBRATION.
6. SIGNAL GND

MODEL	NEXT ASSEMBLY	QTY.
26000		

USED ON

DO NOT SCALE THIS DRAWING

DIMENSIONAL TOLERANCES UNLESS OTHERWISE SPECIFIED

KEITHLEY INSTRUMENTS CLEVELAND, OHIO

DATE 7-8-72 | SCALE | DRN CECHA | ENG. APPR. | MATERIAL | FINISH

TITLE SCHEMATIC, LOG AMP, POSITIVE POLARITY

NO. 25932C

KEITHLEY INSTRUMENTS, INC.

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